

ENVIRONMENTAL & THERMAL BARRIER COATING

ABSTRACT OF THE DISCLOSURE

5 **[0066]** An environmentally and thermally protected component comprising a silicon-based ceramic or composite substrate and an environmental and thermal barrier coating disposed on the substrate. The environmental and thermal barrier coating comprises at least about 50 mole % AlTaO_4 . The composition of the environmental and thermal barrier coating may
10 be adapted to provide excellent CTE (coefficient of thermal expansion) match with a substrate, such as a SiC-based ceramic or composite. Coating compositions of the invention have a stable crystalline structure at a temperature up to at least about 1550°C. Methods for preparing an environmentally and thermally protected component are also disclosed.